

Claims

What is claimed is:

1. A method of forming a coating for an implantable medical device, comprising
 - a) inserting the device into a chamber;
 - b) adjusting the pressure of the chamber to a pressure other than ambient pressure;
 - c) applying a composition comprising a solvent to the implantable device while the device is disposed in an environment having the pressure at other than ambient pressure wherein the pressure is greater than 760 torr if the solvent evaporation rate is to be decreased, and alternatively, wherein other than ambient pressure is less than 760 torr if the solvent evaporation rate is to be increased.
2. The method of Claim 1 wherein the composition comprises a polymer dissolved in the solvent and optionally a therapeutic substance added thereto.
3. The method of Claim 2 wherein the therapeutic substance is actinomycin D, paclitaxel, docetaxel, or rapamycin.
4. The method of Claim 2 wherein the solvent comprises a compound selected from chloroform, acetone, water, buffered saline, dimethylsulfoxide, propylene glycol methyl ether, isopropyl alcohol, n-propyl alcohol, methanol, ethanol, tetrahydrofuran, dimethylformamide, dimethyl acetamide, benzene, toluene, xylene, hexane, cyclohexane, heptane, octane, nonane, decane, decalin, ethyl acetate, butyl acetate, isobutyl acetate, isopropyl acetate, butanol, diacetone alcohol, benzyl alcohol, acetone, 2-butanone, cyclohexanone, dioxane, methylene chloride, carbon tetrachloride, tetrachloroethylene, tetrachloroethane, chlorobenzene, 1,1,1-trichloroethane, formamide, and their combinations.

5. The method of Claim 1 wherein the act of applying comprises spraying the composition on the implantable device.
6. The method of Claim 1 wherein the implantable device is a stent and the act of applying comprises spraying the composition while rotating the stent about the longitudinal axis of the stent.
7. The method of Claim 1 wherein the implantable device is a stent and the act of applying comprises spraying the composition while moving the stent in a linear direction along the longitudinal axis of the stent.
8. The method of Claim 1 wherein the composition includes a therapeutic substance and wherein the temperature of the chamber is adjusted to a temperature that does not adversely affect the therapeutic substance.
9. The method of Claim 8 wherein the composition comprises a polymer dissolved in the solvent.
10. A method of forming a coating for an implantable medical device, comprising
 - a) inserting the device into a chamber;
 - b) adjusting the pressure of the chamber to a pressure other than ambient pressure;
 - c) applying a composition comprising a solvent to the implantable device while the device is disposed in an environment having the pressure at other than ambient pressure wherein the pressure is selected based on the vapor pressure of the solvent.
11. The method of Claim 10 wherein the composition comprises a polymer dissolved in the solvent and optionally a therapeutic substance added thereto.
12. The method of Claim 11 wherein the therapeutic substance is actinomycin D, paclitaxel, docetaxel, or rapamycin.

13. The method of Claim 11 wherein the solvent comprises a compound selected from chloroform, acetone, water, buffered saline, dimethylsulfoxide, propylene glycol methyl ether, isopropyl alcohol, n-propyl alcohol, methanol, ethanol, tetrahydrofuran, dimethylformamide, dimethyl acetamide, benzene, toluene, xylene, hexane, cyclohexane, heptane, octane, nonane, decane, decalin, ethyl acetate, butyl acetate, isobutyl acetate, isopropyl acetate, butanol, diacetone alcohol, benzyl alcohol, acetone, 2-butanone, cyclohexanone, dioxane, methylene chloride, carbon tetrachloride, tetrachloroethylene, tetrachloroethane, chlorobenzene, 1,1,1-trichloroethane, formamide, and their combinations.
14. The method of Claim 10 wherein the act of applying comprises spraying the composition on the implantable device.
15. The method of Claim 10 wherein the implantable device is a stent and the act of applying comprises spraying the composition while rotating the stent about the longitudinal axis of the stent.
16. The method of Claim 10 wherein the implantable device is a stent and the act of applying comprises spraying the composition while moving the stent in a linear direction along the longitudinal axis of the stent.
17. The method of Claim 1 wherein the composition includes a therapeutic substance and wherein the temperature of the chamber is adjusted to a temperature that does not adversely affect the therapeutic substance.
18. The method of Claim 17 wherein the composition includes a polymer dissolved in the solvent.